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ABSTRACT

This paper identifies important knowledge gaps in adult education and training (AET) in Canada and starts to explore strategies to fill these gaps. Following an introduction in English and French, each of the next three sections is comprised of a review of the current state of knowledge on three topics (outcomes of adult learning, motivations and barriers to adult learning, and informal learning) and a discussion of major knowledge gaps relevant to each. Section 2, on outcomes, argues that more must be known about outcomes in terms of overall benefits and costs if the adequacy of AET in Canada is to be judged. Section 3, on motivations and barriers, reports that key knowledge gaps include understanding reasons for participation and non-participation, and assessing whether individual decisions to participate or not are somehow unwarranted because they do not fully reflect associated costs and benefits. The section also argues that increasing knowledge of barriers to AET is a complementary strategy to estimating rates of return in the process of judging the adequacy of training levels in Canada and is essential in design of specific policy actions towards the pursuit of equity goals. Distribution considerations are addressed. Section 4 discusses issues related to informal learning and questions whether informal training is the optimal way for some groups to acquire new skills. Section 5 situates the issue of AET in the context of a strategy of human capital investment and provides a sense of what research priorities should be. Appendixes contain a statistical portrait of AET in Canada; summaries of major Canadian surveys of AET; and 48-item bibliography. (YLB)

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Adult Education and Training in Canada: *Key Knowledge Gaps*

R-00-6E

by
Joni Baran, Gilles Bérubé, Richard Roy and Wendy Salmon
August 2000

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Abstract

Increasingly, human capital investment is seen as an essential ingredient in the growth recipe of advanced economies. In Canada, the adult worker is often singled out as a key candidate for enhanced skills development. Relying on improvements in the supply of skills to solve economic and social problems is not without risks, however. Available evidence suggests that further skills development may not be the best way to address economic and equity goals for all workers, and that accompanying investments may be needed to fully realize expected learning outcomes.

Discussions of a human capital investment policy for adults in Canada could benefit from more information than what is currently available. With this in mind, the goal of this paper is to identify important adult-learning knowledge gaps. Specific consideration is given to the outcomes and returns to adult learning, the barriers and motivations to adult skills development, and the role and frequency of informal skills acquisition. A better understanding of these issues will not only help us assess the overall adequacy of current levels of Canadian investment in adult skills development, but will also inform the design of effective policy actions to encourage broader participation in adult learning.

It is clear that there are a number of significant gaps in our understanding of adult learning in Canada. By addressing these knowledge gaps, we will be in a better position to effectively encourage and enable "lifelong learning for all."

Résumé

On considère de plus en plus l'investissement dans le capital humain comme un ingrédient essentiel à la croissance des économies avancées. Au Canada, on voit souvent le travailleur adulte comme le principal candidat au perfectionnement professionnel avancé. Le fait de miser sur l'amélioration des compétences disponibles sur le marché pour régler les problèmes économiques et sociaux comporte toutefois des risques. Les données dont nous disposons suggèrent que le perfectionnement professionnel accru n'est peut-être pas la meilleure façon d'atteindre nos objectifs en matière d'économie et d'équité pour l'ensemble des travailleurs : des investissements seront peut-être également nécessaires si l'on veut obtenir tous les résultats escomptés en matière d'apprentissage.

Le débat sur les politiques d'investissement dans le capital humain adulte, au Canada, serait plus fructueux si nous disposions de plus de données sur la question. Tout en tenant compte de cette réalité, nous tentons ici de cerner les lacunes importantes dans nos connaissances sur l'apprentissage des adultes. Une attention particulière est accordée aux résultats et au rendement de l'apprentissage chez les adultes; aux obstacles et aux facteurs de motivation en jeu dans le perfectionnement des compétences ainsi qu'au rôle et à la fréquence de l'acquisition informelle de compétences. Non seulement une meilleure compréhension de ces questions dans leur ensemble nous permettra-t-elle d'évaluer si les niveaux actuels d'investissement dans le perfectionnement professionnel des adultes au Canada sont suffisants, mais elle permettra également l'élaboration informée d'initiatives d'orientation efficaces afin d'encourager une plus grande participation des adultes à l'apprentissage.

Il est évident qu'il existe de nombreuses lacunes importantes dans notre compréhension de l'apprentissage des adultes au Canada. En remédiant à cette situation, nous serons dans une meilleure position pour encourager et faciliter de façon efficace « l'apprentissage continu pour tous ».

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1. Introduction

There is a general view among economic commentators and policy makers that advanced countries could secure comparative advantage and continue to expand their living standards by moving more and more into the production of high value-added goods and services. Human capital investment is seen as an essential ingredient in the growth recipe of advanced economies. In Canada and in other countries where a relatively large amount of private and public resources is already dedicated to initial education and where the incidence of adult education and training is average by international standards, the adult-worker group is often singled out as a key area for expanding human capital investment.

A related policy concern is that adjustments toward a more knowledge-based economy may leave the lesser-skilled workforce on the sidelines. There is evidence that the least-educated and least-skilled individuals in Canada, a large proportion of whom are adults, cannot earn a decent living through work. Consequently, they are leaving, or are at risk of leaving, the labour market and becoming socially marginalized. Equity considerations dictate that specific efforts should be made to help the poorly skilled, and job-related training has often been suggested as the means to improve their lot.

Relying on improvements in the supply of skills to solve economic and social problems is not without risks, however [Krugman (1994), Crouch *et al.* (1999)]. There are already substantial amounts of human capital investment taking place in developed economies and, in particular, in Canada. Investing a lot in human capital, however, without accompanying investments in physical capital, can create imbalances that would lead to greater income inequalities [Beaudry and Green (2000)]. For lesser-educated and less-skilled adults, especially those in older age groups (who may have difficulties acquiring the skills required by a modern economy), employment subsidies may be a more efficient means to raise their earnings than is training [Heckman and Lochner (1999)].

Discussions on human capital investment policy for adults in Canada could benefit from more information than is currently available. Accordingly, the main goals of this paper are to identify important knowledge gaps in the area of adult learning and to start exploring strategies to fill these gaps.

As shown in Appendix A, individuals in Canada do not engage in formal adult education and training (AET) as much as do individuals in some other advanced countries. When one abstracts from participation distribution considerations, Canada ranks in the middle of the pack in terms of aggregate formal AET volume per employed person. This fact alone, however, is not sufficient to conclude that adults in Canada under-invest in human capital. It is possible that other types of human capital investment, such as initial education or informal learning, compensate for our average investment in formal AET. It is also possible that needs for formal AET differ among economies as a result of dissimilar production structures, distinct labour market organizations, or different population compositions. Without evidence on the costs and benefits of formal AET to individuals, firms and society, it is impossible to determine whether there is under-investment in formal AET [Edquist and Riddell (1999)]. It is argued in Section 2 of this paper that we need to know more about the ***outcomes of training*** in terms of overall benefits and costs in order to be able to judge the adequacy of adult learning in Canada.

The unequal distribution of formal adult education and training participation in Canada is sometimes suggested as evidence that Canada has a sub-optimal level of formal AET. The underlying assumption is that non-participation by lesser-skilled individuals is necessarily unwarranted; that the benefits of additional training – to individuals, firms and society – would outweigh the costs. However, strictly speaking, there could be many reasons why adults would not undertake formal training; where non-participation could be optimal for all parties involved, i.e., individuals, firms and society. Key knowledge gaps include understanding the reasons for participation and non-participation and, above all, assessing whether individual decisions to either participate or not participate are somehow unwarranted because they do not fully reflect associated costs and benefits. Increasing our knowledge of barriers to training is a complementary strategy to estimating rates of return in the process of judging the adequacy of training levels in Canada. Increasing our knowledge of training barriers is also essential in the

design of specific policy actions towards the pursuit of equity goals. Distribution considerations and ***motivations and barriers to training*** are addressed in Section 3.

As mentioned above, formal AET is only one aspect of human capital investment. There is evidence that informal vocational learning among adults is an important source of skill formation in a modern society. Indeed, it is likely that certain subsets of individuals and firms find informal training to be more beneficial to them than formal methods of learning. There is an urgent need to consider the incidence of informal training in order to assess the overall adequacy of training in Canada. Informal methods of training may prove to be the best fit for some gaps in the AET landscape, thereby providing an alternative to formal training in fostering skill acquisition among adults. Issues related to ***informal learning*** are discussed in Section 4.

Each of the following three sections (Outcomes; Motivations and Barriers; Informal Learning) is comprised of a brief review of the current state of knowledge on the aforementioned topics and a discussion of what we consider to be some of the major knowledge gaps. The sections on outcomes and on motivations and barriers make reference to issues as they pertain to both individuals and to firms, recognizing the important role played by both in the adult learning decision. The conclusion of this paper situates the issue of adult learning in the context of a strategy of human capital investment. It provides a sense of what research priorities should be over the coming years. The paper ends with two appendices. Appendix A gives a short statistical portrait of adult education and training in Canada while Appendix B presents a summary of methodology and coverage of some major Canadian surveys on adult training.

2. Outcomes of Adult Learning

As pointed out in the Introduction, a simple international comparison of Canada's overall level of investment in formal adult learning is not sufficient to conclude that adults in Canada under-invest in human capital development. Although Canada currently ranks in the middle of the pack in terms of overall adult learning participation, this fact must be viewed within the context of Canada's demographic profile and education-related patterns of training participation. Taking these factors into consideration, the OECD ranks Canada second in terms of expected job-related training hours for individuals between the ages of 25 and 64 [OECD (1999)].[1] Population characteristics aside, international comparisons of adult skills development reflect differences in educational infrastructure, industrial composition, and labour market organization.

That said, there are still concerns that the current level of AET participation in Canada is too low. To judge the validity of this concern, we first need evidence on the costs and benefits of adult human capital development to firms, individuals, and society at large. Learning more about returns on training, in particular as they accrue to firms and population subsets, will also help us better understand and assess optimal training levels and distributions.

2.1 Current State of Knowledge

What are the benefits to individuals, firms, and society at large of adult participation in continuing learning? From economic and efficiency points of view, do firms and individuals invest in further training to a degree consistent with economic returns on these investments?

The difficulty of quantifying rates of return on adult education and training largely reflects difficulties associated with the measurement of training incidence and intensity (particularly for informal learning), as well as difficulties in trying to isolate the pure effects of training from other factors that influence wage or productivity growth. Measurement issues arise because of a number of factors. First, adult learning episodes are generally shorter and more difficult to recall than are those of initial education. Second, adult learning is more heterogeneous than initial education in terms of both content and instruction method. Third, an important component of

[1] See Appendix A for a more detailed discussion.

on-the-job learning is informal (for example, learning by watching co-workers), which is more difficult to measure accurately than are episodes of formal learning.

Measurement issues aside, the few available estimates of rates of return for employer-sponsored learning are uniformly high for individuals – ranging from 20 percent [Hum and Simpson (1996)], through 30 to 50 percent [Mincer (1989)], and as much as 300 percent for formal training in particular [Frazis and Loewenstein (1999)].[2] The measured wage premium for workers who have undertaken formal training with their current employer is approximately 10 percent, with an additional premium for training received from previous employers [Betcherman *et al.* (1998)]. Where estimates are available, evidence suggests that returns to informal training tend to be small and often insignificant [Loewenstein and Spletzer (1994)].

A number of analysts have concluded that, in general, estimates of rates of return to individuals for employer-sponsored adult learning may be greater than are the private returns to individuals for initial post-secondary education. They may also largely surpass the rate of return to firms normally required on investments in physical capital [Hum and Simpson (1996), Frazis and Loewenstein (1999)]. However, many studies examining training-related wage increases do not correct for self-selection bias, and therefore this research may well over-estimate the returns directly attributable to employer-sponsored job training [Heckman and Lochner (1999), Goux and Maurin (2000)]. Authors are careful to note that wage increases accruing to those who received training may not be generalizable to the larger population or even to individuals with the same demographic and education profile.

Taken in the aggregate, the returns to publicly-sponsored adult learning generally fall below those of privately-sponsored training programs [Heckman (1998), OECD (1998)]. These lower returns reflect both the lower skill level of trainees engaged in government programs, and the more direct link between private training sponsorship and market-driven skill needs.

[2] The authors caution that these outcomes cannot be generalized to the whole population: estimated returns ascribe only to the individuals who receive hours of training equal to the annual average, a result which is taken as reflecting strong heterogeneity in training structure and individual trainee aptitudes.

Because of measurement and analytical difficulties, statistical evidence of the returns to firms on their investment in training is limited. Available evidence suggests that there are productivity returns to the firm's training investment [OECD (1994), Betcherman *et al.* (1998), U.S. Department of Commerce *et al.* (1999)], with benefits seeming to be greatest when training is part of the firm's broader workplace and business strategies [OECD (1998)]. In general, the positive productivity effects of worker training appear to hold regardless of the industrial sector in which the firm is involved. The overall benefits of firm-sponsored training are generally shared about equally between the trainee and the employer [OECD (1994), Hum and Simpson (1996)].

The preceding aggregate estimates aside, there are convincing theoretical arguments, supported by practical evidence, suggesting that important differences in training returns prevail across population subsets. Although in general the wage increases associated with privately-sponsored adult learning can be significant, it is not reasonable to expect this conclusion to hold for all individuals or for all training content. In general, training outcomes will vary by type of training provided (field of study), by skill level and age of the trainee, by training format (whether formal or informal) and by industrial sector. Training outcomes will also vary by the degree to which training content is linked to actual workplace needs [Hum and Simpson (1996), Frazis and Loewenstein (1999)].

To our knowledge, very little systematic information is available which measures different training outcomes by population or firm cohort. That said, cross-country analysis of data from the International Adult Literacy Survey suggests that university graduates may garner the lowest private benefits from training. Though limited, available empirical evidence supports this conclusion, suggesting that wage increases associated with adult learning may be highest among some categories of workers who, somewhat perversely, both need it the most and are least likely to participate [OECD (1999)].[3] Even this conclusion, however, cannot be said to apply across the board. There is evidence to support the notion that "raising the skill level and earnings of uneducated and unskilled workers is extremely costly" [Heckman and Lockner (1999)], leaving

[3] It appears that not much is known about the distribution of these rates of return and hence the risk associated with these episodes of learning.

the authors to conclude that, among the least-skilled, employment subsidies, rather than training, are the most efficient means of raising earnings.

Our discussion of training outcomes has so far focused only on private market measures such as increases in earnings for individuals and enhanced productivity for firms. But what about the broader societal benefits of adult learning? Not all benefits of investment in human capital can be measured in terms of direct economic impact. Education, for example, is positively correlated with health status, lower crime levels, and a cleaner environment. Positive outcomes have also been noted in terms of income distribution and equity, and in intergenerational transfers of social and economic values [McMahon (1997), OECD (1998)]. Social returns to investment in human capital are difficult to measure. In part, this reflects difficulties associated with valuing outcomes such as the private intergenerational benefits of parental education or the non-monetary benefits associated with reduced crime. Measuring social returns to investment in human capital is also problematic because collective benefits can be difficult to conceptualize and quantify in any meaningful sense. While there are some estimates of social rates of return for initial education (which take into account only a subset of potential social benefits), we are not aware of any specific measures of social returns to adult human capital investment.

2.2 Knowledge Gaps

The previous section has summarized available evidence on rates of return to AET. From the discussion, it seems clear that trainee wages and firm productivity are positively related to participation in training.[4] That said, limitations in our ability to disentangle the productivity and wage increases directly associated with training (as distinct from those associated with a host of other measurable and unmeasurable variables) make it difficult to quantify the precise magnitude of private returns to adult training investments.

Difficult though it may be, it is important to develop a better understanding of the impact that adult learning has on firm productivity and trainee wages. In particular, are estimates of training-related wage increases generalizable to the entire population? And do they provide a good

[4] There is little information available on the return to training intensity (as opposed to incidence). Though limited, available evidence suggests sharply diminishing returns to hours of learning [Frazis and Loewenstein (1999)].

indication of the expected returns on which firms or individuals base their training decisions? Understanding the outcomes of adult learning is critical to an assessment of overall training adequacy.

There is also a need for information on training returns as they accrue to specific population subsets. This information is necessary to understand the degree to which the current uneven distribution of training is a result of market failures in the allocation of training. Does the current pattern of training distribution (with more training going to the young and the better educated) – a seemingly inequitable distribution – actually reflect real differences in training returns, and therefore represent an optimal allocation of training resources? The data cited above, attributing larger wage increases to less-skilled training participants, suggests that the current allocation may not be optimal. Arguments to the contrary – that employment subsidies and not training may be the best strategy for the most low-skilled adults – point out the need for further research in this important area.

Detailed data on returns to training will not only help to better identify where market failures affect the distribution of training; it could also be an important piece of information for addressing distribution imbalances. The goal for individuals, firms and governments is to make optimal training decisions, informed by a clear understanding of training impacts as they pertain to specific situations, and in light of their own training objectives and priorities. By equipping decision-makers with better information regarding training outcomes, we can enable the most appropriate training decisions.

The interests of government extend beyond the degree to which training affects firm productivity and worker incomes, however. Adult training can also be an important element in strategies to support social inclusion and equity. The potentially significant overall social returns to adult learning are not captured in standard economic measures. For government policy makers, then, who are examining their role in enabling and supporting adult skills development, measurement of the social returns to training – giving value to such issues as equity, income redistribution, social inclusion and intergenerational returns – is important. Associated empirical issues are extremely problematic, since they include not only the direct measurement of returns attributed to

adult learning, but also the specification of an appropriately comprehensive evaluation framework [McMahon (1997)].

The private outcomes of training are not directly measured within cross-sectional surveys of training, such as Canada's Adult Education and Training Survey, since training benefits tend to accrue over time. On the other hand, estimates of returns to initial education are largely based on cross-sectional data. One can therefore argue for the potential contribution this tool might bring to measuring returns to adult learning, though recognizing that more precise cross-sectional information on training participation could be required. What are the potential advantages and disadvantages of working within the cross-sectional survey structure?

Precise measurement of returns to adult learning would require a longer reporting time-frame than that supported by cross-sectional surveys. Is a longitudinal survey the best means to measure training outcomes? What are the opportunities and challenges associated with linking administrative records, or with undertaking detailed work within a specific industrial sector? Alternatively, is there scope for social experiments[5] as a means of evaluating the impact of adult learning on earnings, on employability, and on other economic and social outcomes?

There is a need to generate a better understanding of private and social returns on investment in adult skill development. This information is key to assessing training adequacy and also to answering questions about the characteristics of successful training programs and successful trainees. Associated analytical challenges include the measurement of both direct and indirect training returns (often including important intangibles), and the specification of a clear assessment model.

[5] Generally speaking, a social experiment involves testing a new program approach with a randomly selected but representative sub-sample of the target population (the treatment group). All else being equal, investigators can assess the mean impact of the particular treatment being tested by comparing participant outcomes with those of the remainder of the target population (the control group) [Burtless (1995), Heckman and Smith (1995)]. A notable Canadian social experiment is the Earnings Supplement Project (ESP), implemented by Human Resources Development Canada in 1995 to test an Employment Insurance initiative designed to encourage displaced workers to return to work more quickly [Bloom *et al* (1999)].

3. Motivations and Barriers to Adult Learning

As indicated in the Introduction, there may be a link between the overall level of adult training in an economy and the distribution of that training. Cross-country evidence suggests that overall training rates are lower in countries where participation is less equally distributed among groups of individuals [OECD (1999)]. These differences in training incidence may in turn reflect variations in institutions, culture or, generally speaking, incentives to train.

Analyzing barriers to training can help us to understand why some groups of adults are not participating and assist us in appraising whether or not non-participation is warranted. For the purposes of this paper, "barriers" are understood as market failures, institutional factors or dispositions that prevent individuals or firms from investing at an optimal level.

Learning more about barriers to training is a complementary strategy to estimating rates of return in judging the adequacy of overall training levels in Canada. Also, understanding obstacles to adult training is essential for policy actions that pursue equity goals. To increase the incidence of training among older workers or less-educated adults, governments need to understand the impediments that result in non-participation.

3.1 Current State of Knowledge

3.1.1 Motivations and Barriers for Individuals

The conventional model of training is based on the human capital investment theory according to which individuals and firms invest in training to increase their productivity and their earnings. Based on such models and taking into account the evidence that skill begets skill [Heckman and Lochner (1999)], younger well-educated adults should be expected to train more than older and less-educated adults. This is pretty much what is observed in OECD countries where decision-making on adult education and training is mostly left to the private sector.

Within Canada there are groups which participate in adult education and training to a lesser degree than others. For instance, according to the 1998 Adult and Education and Training Survey, the self-employed participate in job-related training at a rate that is almost half of that for paid employees. Workers in small firms participate at a significantly lower rate than those in

large firms. By occupational group, blue-collar workers and sales and clerical staff take much less training than do professional and managerial employees. By education level, high school graduates participate at less than half the rate of graduates with a university degree. By age, the participation rate is highest for the youngest worker with the rate falling as workers age; eventually the typical worker aged 55-64 years will have a participation rate of less than half of the youngest adult. Multivariate regressions using data from the 1998 Adult and Education and Training Survey or data from the 1995 pilot version of the Workplace and Employee Survey corroborate these findings [Rubenson (1999), OECD (1999)].

The Adult Education and Training Survey shows that a majority of the respondents who indicate that there was training they wanted to take but did not, point to a lack of time as the primary barrier to training.[6] Other important deterrents include the cost of training, inconvenient times and an inconvenient location. In that survey, only those who indicate that they have unmet training needs or wants are asked about training barriers. Respondents who do not indicate any unmet training needs or wants are not asked about whether there were any barriers to taking training. However, the same survey shows that 40 percent of Canadian adults neither saw the need nor expressed an interest in participating in continuing learning in 1997. Moreover, of the remaining 60 percent who expressed an interest in taking some form of training, only half of those individuals actually did train. Unfortunately, there are no questions in the survey to determine why those respondents are not interested in training.

Some analysts argue that liquidity constraints – difficulties associated with financing the learning event – may prevent individuals from investing on their own in further skill development. Though potential adult learners often cite lack of money as a reason for their non-participation, there is evidence that short-term liquidity constraints have actually been over-emphasized as a deterrent to individual investment in human capital [Heckman and Lochner (1999)]; that long-run factors such as ability to learn and learning preferences are more important to the over-all learning decision.

[6] Similar results are obtained in other surveys covering adult education and training, including U.S. Bureau of Labor Statistics surveys and the International Adult Literacy Survey.

3.1.2 Motivations and Barriers for Firms

Firms make investments in the development of their workers in order to enhance productive capacity. For some firms, investment in training is indeed essential to increasing productivity and maintaining competitiveness. However, it is often argued that firms under-invest in training due to market failures. The most often cited market failures are the risk of poaching of trained employees by other firms, asymmetrical distribution of information on training (particularly among firms of different sizes and different sectors), and liquidity constraints due to imperfect capital markets.

The poaching argument relates to the fact that firms cannot secure the returns on an investment in transferable training as their trained employees may be hired away. As a result, employers may invest in a sub-optimal level of training.

Information problems may result from the complexities associated with measuring or accounting for investment in intangible assets such as human capital. These problems may contribute to under-investment in training, especially in risk-averse firms which may be more inclined to undertake tangible investments with more explicit rates of return. Additionally, the recent proliferation of private-sector training providers may make it more difficult to evaluate training alternatives (in terms of identifying potential suppliers, evaluating course content and comparing quality of courses). These information problems may be magnified for small firms.

Liquidity constraints may result from the reluctance of financial institutions to provide funding for intangible investments. Liquidity constraints would lead to under-investment in training by firms, even if the expected rate of return is high. This effect could again be more severe for small firms.

The available empirical evidence suggests that such market failures do not constitute major impediments to training for most employers. That said, results of the Workplace Training Survey suggest that training disincentives – such as the potential loss of trained workers to other organizations and information constraints – are important training barriers for a significant minority of firms in Canada. After reviewing the evidence from this and other surveys regarding employers' assessment of the effects that poaching and other barriers may have on firm-

sponsored training, Betcherman *et al.* (1999) conclude that "for large numbers of firms, specific obstacles do not lead to real under-investment."[7] This is not to say, however, that training disincentives do not exist for some firms.

Institutional factors, like labour market regulations and institutions can also affect the amount of firm-sponsored training. For example, less stringent employment protection legislation can make it less costly for firms to replace workers than to re-train them [Bosch (1999)]. Also, when labour market institutions (such as union wage setting and minimum wages) contribute to compression of the structure of wages, they may have an important impact on the amount of firm-sponsored training, and account for some international differences in training practices [Acemoglu and Pischke (1999)].

3.2 Knowledge Gaps

3.2.1 For Individuals

Existing surveys of adult education and training ask respondents whether factors like lack of time, family responsibilities, high fees and lack of appropriate course offerings play a role in their decision not to take training. However, the interpretation of responses to such questions can be ambiguous. For instance, do reported cost constraints mean that the respondents are facing unwarranted difficulties in obtaining financing, or rather, do they reflect the fact that respondents do not expect large net benefits from training? If it is the latter, measures to help the financing of investment in training would be ineffective. Similarly, reported lack of time for participation in training may simply be an indication that the respondents do not associate a high return to their participation in training, and therefore choose to invest their time in other activities. As observed by Rubenson and Schuetze (1999), for many respondents "mentioning lack of time is mainly a statement of the value they ascribe to education and training, and the expected outcome of such an activity. The same applies to the cost barrier."

Furthermore, existing surveys do not provide information on why a large number of adults neither perceive a need nor feel a desire to engage in training. Is it because their expected rate of

[7] Other barriers include cost of training, lost production while workers are on training, lack of government assistance, and lack of suitable training courses and trainers.

return does not warrant investing in training? Rubenson and Schuetze (1999) argue that "instead of barriers that might have to do with cost and lack of time, it is probably differences in expected rewards that can explain why some choose to participate while others remain outside." For those who expect a low rate of return, we need to know why it is so. Is it because the opportunity cost of such an investment is too high or because the amortization period for reaping the benefits is too short? Uncertainty surrounding the future benefits to investment in training and education may also prevent risk-averse individuals from dedicating resources to such an investment. For example, wage-fixing practices rarely establish a link between acquired competencies and earnings.

There is also the possibility that some individuals may not recognize the value or return to training because of a negative attitude towards learning. "Through socialization within the family, in the school and, later on, in working life, a positive disposition toward adult education becomes a part of some groups' habitus but not of others" [Rubenson and Xu (1997)]. Children of poor families may be adversely affected by the absence of family motivation for learning and other unfavorable conditions that affect learning ability [Heckman and Klenow (1997)]. When such children eventually mature, they bring their indifferent dispositions to learning to the workforce.

Existing surveys provide little information on participants' and non-participants' expectations of returns on further investment in skill development. What is the best approach to gathering more information about the incentives and disincentives that influence adults' decisions regarding continuing investment in education and training? Modifications to existing household surveys like the Adult Education and Training Survey? Or is experimental economics a more promising means to identify the expected rates of return required for individuals to invest in further skill development, and to comprehend the role of risk aversion and opportunity costs in their training decisions? It is worth noting that one by-product of the research suggested in Section 2 – Outcomes of Adult Learning – would be to provide measures of the return to adult skills development. This information would provide a valuable input to discussion of training motivations and barriers, and to considering the role of expectations in the individual and the firm learning decision.

3.2.2 For Firms

As for individuals, information gathered so far from employers on barriers to training is not easy to interpret. While employer surveys often provide an abundance of data on the correlation between firm characteristics and the incidence and intensity of employer-supported training, they generate relatively little information about the basis of the employer's training decision. The survey evidence reviewed in this paper suggests that a number of firms invest relatively little in training. Such a result certainly cannot be taken as an indication that market failures or institutional factors represent serious impediments to the provision of training by firms. Indeed, for many firms, limited investment in training may be the result of a rational decision, reflecting the expectation of low or uncertain rates of return. Conversely, for some firms who do invest in training, the latter may not be viewed primarily as a tool to directly increase their performance but more as an element of a compensation package designed to attract high-skilled employees who value training to their firm.

What is the best empirical approach to learn more about how and upon which basis employers make their decisions with respect to investment in training? Surveys? Case studies? What is the role of information in the firm training decision? Would additional or more targeted adult learning information result in a greater firm commitment to worker skills development? Can experimental economics and social experiments provide useful insights?

4. Informal Learning

Although relatively little is known about informal training in Canada, its role has implications for AET policy. Knowing more about the rate of participation in informal training, as well as the reasons behind choosing this mode of learning, is critical to analyzing both rates of return and barriers to AET. There may be groups who train informally due to the presence of barriers to formal training and who, therefore, may not be training optimally (in terms of content, coverage, recognition through credentials, etc.). On the other hand, informal training may represent the most efficient and effective means of learning for certain individuals and firms and should be further explored as an alternative means of providing training. Although we recognize the importance of learning in general, the focus of our interest is on vocational learning which links adult training to the labour market.

4.1 Current State of Knowledge

The extent and outcomes of informal training in Canada are not currently well understood. While most available adult education and training data reflect formal training, there is growing recognition that informal learning is an important source of skill formation in modern economies.

The Adult Education and Training Survey identifies particular groups which participate much less than do others in formal education. These include the self-employed, employees in small firms, blue-collar workers, older workers and individuals with low levels of initial education. For one reason or another, such groups may be using informal modes of training as a substitute for formal training and, in fact, may be training mostly at an informal level. The self-employed may find training informally to be more efficient in terms of both time and cost. Some industries and occupations may derive greater benefit from informal training, as it can be geared more specifically to their own area of expertise. If it is the case that certain groups rely more heavily on informal training, between-group differences in participation rates may be overstated and the level of overall training underestimated in surveys that measure only formal learning (such as the Adult Education and Training Survey). We need to understand both types of training in order to assess participation.

In fact, some smaller-scale surveys in Canada, as well as surveys conducted by the Bureau of Labor Statistics in the U.S. and the Australian Bureau of Statistics, provide evidence that informal training is a very important way for employees to acquire job-related skills, particularly for certain subsets of the population.

For instance, the New Approaches to Lifelong Learning Survey conducted in 1998 by the Ontario Institute for Studies In Education at the University of Toronto suggests that Canadian adults in the labour force spend several hours a week in informal learning related to their current or prospective employment [Livingstone and Roth (1998)]. By way of contrast, the number of formal training hours for the same population, as measured by the Adult Education and Training Survey, appears to be substantially lower. The New Approaches to Lifelong Learning Survey also suggests that individuals with low levels of schooling devote as much time on average to informal learning as individuals with higher levels of initial education. Again, this finding is quite different from that of the Adult Education and Training Survey and other measures of formal learning, which find that individuals with low levels of initial education are generally much less involved in formal training than are the more highly educated.

On the firm side, the Workplace Training Survey, conducted in 1995, shows that 70 percent of establishments in Canada undertook some training in the previous year, with informal training accounting for nearly three-quarters of the overall training effort [Betcherman *et al.* (1997)]. The same survey found that the incidence of informal training across firms is much less variable than is the incidence of formal training, although many small firms appear to provide exclusively informal training. Surveys in other countries also show that informal training is of greater importance overall than formal training [Frazis *et al.* (1998, June), Murphy (2000)].

In the U.S, the incidence of informal training has been found to vary greatly across available data sets, unlike the incidence of formal training. Moreover, there is evidence suggesting that informal training is to some extent a complement to, as opposed to a substitute for, formal training, with some skills simply being most cost-effectively learned via informal on-the-job training [Loewenstein and Spletzer (1994)].

4.2 Knowledge Gaps

Even if participation rates in informal training were offsetting low participation rates in formal training among particular groups, the question of whether informal training is the optimal way for these groups to acquire new skills would remain. It is probable that there are circumstances in which training is best done informally. For instance, when developments in a field are occurring rapidly and there is a need to acquire new knowledge quickly, it is likely to be more efficient to learn (or at least begin to learn) on an informal basis rather than waiting for formal training courses to be developed.

Conversely, there may be circumstances where informal training is substituted for formal training even though it may not be optimal. For example, the self-employed and employees in small firms tend to have much lower participation rates in formal training than do paid employees in larger firms. It is likely the case that these workers generally do benefit more than paid employees from certain types of informal training due to more narrow areas of expertise. However, it may also be the case that time and cost constraints force them to pursue training on an informal basis in situations where greater benefits could in fact be derived from more structured methods of training.

Additionally, lower-educated individuals may be turning to informal training because of difficulties with accessing formal training due to lack of employer support or other institutional, situational or dispositional barriers to formal training. This is a group whose labour market experience would likely benefit from acquiring the credentials associated with formal education and training to the extent that employers use formal qualifications as a means to identify and select potential employees.

The first measurement issue that needs to be addressed with respect to informal training relates to defining the term. First, how broadly should one define the concept of informal training? Does there have to be a clear intention to learn and a preconceived notion of what is to be learned? We must precisely define our notion of informal training and clearly distinguish it from formal training [OECD (1997)]. Secondly, the fact that informal training tends to occur frequently in short episodes makes it difficult to recall and burdensome to report. It appears that more reliable

estimates of the volume of informal training are obtained when measured over short reference periods [OECD (1997)]. In 1995, the Bureau of Labor Statistics in the U.S. used a ten-day to two-week training log for both employees and employers to record episodes of informal training [Frazis *et al.* (1998)]. We must determine the appropriateness of various instruments to measure informal training. Are surveys of employees and/or employers the best approach? Should we use case studies? Or a combination of these two instruments?

A particularly interesting case to study is the training decision of the self-employed given that those who work for themselves assume the role of both employee and employer.

5. Conclusion

Substantial efforts and resources are devoted to assessing the role, importance and performance of formal educational institutions. These efforts are understandable, as initial education represents an enormous investment in human capital, especially in the acquisition of cognitive skills. Initial education absorbs a large share of public and private expenditures. Investing in skills early in life makes sense because the time horizon over which the benefits will accrue is longer. It is also accepted that returns to learning tend to be higher for people who have already acquired a capacity to learn through initial education and pre-school learning. Therefore, from a public policy perspective, there is merit in emphasizing early investments in learning.

The fact that educational investments in early stages of the life cycle are important does not imply that no investment occurs or should occur at later periods of life. It is now well recognized that skill formation ***is*** a lifelong affair. For example, some recent estimates for the United States suggest that post-initial education learning may account for up to one-half of all skill formation [Heckman, Lochner and Taber (1998)]. Formal and informal adult education and training is most certainly an important source of post-school skills and therefore deserves the attention of researchers and policy makers alike.

The fact that learning is a lifelong business does not mean that all measures that foster human capital investment are desirable. As suggested by Heckman [1998], the key to designing a good public policy in the area of human capital investment is acknowledging the life cycle aspects of learning and using the appropriate type of intervention within the set of policy instruments available to policy makers.

This paper argues that more should be known in order to develop policies to affect training patterns among adults in a substantial way. The available evidence is limited and it is essential to make progress quickly on the three types of knowledge gaps identified in this paper – the outcomes of adult learning (in terms of costs and benefits), the motivations and barriers to adult skills development, and informal learning.

Of course, filling these knowledge gaps is not a trivial task. It has been noted by the OECD that past analytical work on human capital has been strongly guided by the availability of data and, concomitantly, by what is easy to measure, not by what is desirable to measure [OECD (1998)]. Adult vocational training is a fragmented and complex form of learning, especially in its most informal aspects, and therefore is a challenge to measure. The main goal of this paper has been to identify key knowledge gaps in the area of adult learning, and to start exploring strategies to fill these gaps. Future work in the area will build on the ideas and priorities expressed in the preceding.

Appendix A

A Statistical Portrait of Adult Education and Training in Canada

The focus of this Appendix is on descriptive statistics as they relate to Canadian levels and patterns of participation in adult learning. International data is provided for comparative purposes. The data sources referenced are Canada's 1992, 1994 and 1998 Adult Education and Training Surveys (AETS), and the 1994/95 International Adult Literacy Survey (IALS). These data necessarily limit the discussion to measured incidence and volumes of formal learning.

In the international context, Canada's level of investment in initial education is relatively high. A recent OECD study shows that in 1994, among industrialized countries, Canada had the highest proportion of the population with tertiary education. That said, the IALS suggests that Canada's participation levels and training volume for adult learning are only about average among industrialized nations.

Table A1
Employed Workers in Job-Related Training
Adults aged 25 to 54 years

	Participation Rate (%)	*Average Hours per Worker*	*Participation Rate Ratio – Younger to Older Workers (1)*
Australia	44.6	61.3	1.16
Canada	37.7	41.1	1.96
Germany	20.0	40.5	1.79
New Zealand	49.1	69.0	1.08
Sweden	55.5	Data not available	0.93
Switzerland (2)	33.0	11.3	1.47
United Kingdom	58.0	52.1	1.56
United States	48.8	46.6	0.97
Unweighted Mean (3)	37.1	41.5	1.35

(1) Ratio of the participation rate of younger workers (25 to 29) to the participation rate of older workers (50 to 54).
(2) Weighted average of the values for the French and the German-speaking populations.
(3) Includes data for Australia, Belgium (Flanders), Canada, Germany, Ireland, Netherlands, New Zealand, Poland, Sweden, Switzerland, United Kingdom, United States.

Source: *Employment Outlook*, OECD, 1999, based on the International Adult Literacy Survey, 1994-95

Moving beyond the aggregates, the IALS points out important inter-country differences in patterns of adult learning participation. These include strong variance in learning propensities by both age and level of education. Although adult learning probabilities rise with levels of education in all countries, the degree of difference seems to be somewhat smaller in Canada. With respect to age, Canadian workers aged 24 to 29 are almost twice as likely to engage in job-related training as are their colleagues aged 50 to 54. Canada's age-related adult learning participation ratio is the highest among the countries surveyed (see Table A1). This fact suggests that Canada could experience a natural increase in overall training as younger demographic cohorts pass through their working lives. Indeed, a natural increase in overall training is reflected in OECD estimates of cumulative job-related training expectancy for a 'typical' individual (see Table A2). Assuming that conditions at the time of the survey will prevail in the future, and weighting average training hours by worker education level, age, gender and labour market status, the average Canadian can expect to undertake 2,109 cumulative hours of job-related training between ages 25 and 64. This level is second highest among the countries included in the analysis, and more than 60 percent higher than the all-country average.

Table A2

Training Expectancy (1)

Cumulative hours of job-related training between the ages of 25 and 64 years

	Cumulative Training Hours
Australia	1,605
Canada	2,109
Germany	1,833
New Zealand	2,627
Switzerland (French)	217
Switzerland (German)	353
United Kingdom	1,666
United States	1,403
Unweighted Mean (2)	1,288

(1) Expected training hours are the cumulation, over five-year age intervals between the ages of 25 and 64, of age, gender and education-specific estimates of mean training hours. Mean training hours for a specific age, gender and education level were calculated as the weighted averages of the mean hours of training for each of three labour force states (employed, unemployed, not in the labour force), with population shares used as weights, based on the results of the 1994-95 International Adult Literacy Survey.

(2) Includes data for Australia, Belgium (Flanders), Canada, Germany, Ireland, Netherlands, New Zealand, Poland, Switzerland, United Kingdom, and the United States.

Source: *Employment Outlook*, OECD, 1999, based on the International Adult Literacy Survey, 1994-95.

The most recent version of the AETS suggests that in 1997 some 28 percent of adults in Canada – approximately 6 million individuals – participated in formal learning (see Table A3).[8,9] This figure represents a slight decline relative to overall participation rates in earlier years. Conversely, average annual training hours per participant rose during the 1990's – from 140 hours in 1991 to 209 hours in 1997. This growth more than offset the small participation decline, leading the total number of adult learning hours to increase by 55 percent between 1991 and 1997. Taken together, the total number of hours Canadian adults spent in formal instruction in 1997 – almost 1.27 billion – equaled the total number of hours spent in full-time study by youth aged 17 to 24.[10]

Table A3
Adult Education and Training Participation Rates
Canada, 1991 - 1997

	Adult Population, Total	*Employer-Sponsored*	*Non-employer-Sponsored*
1991	30.8	24.5	19.5
1993	30.3	25.7	19.8
1997	27.7	25.6	14.9

Of employed adults, 26 percent received some form of employer support for formal learning in 1997. This proportion was a modest increase from the employer-sponsored proportion measured in 1991. Sixty percent of all adult learners received some form of employer support in 1997, an increase of ten percentage points from the employer-sponsored proportion of 1991. By way of contrast, through the 1990s the proportion of adult learners sponsoring their own skills development decreased from 57 percent of the total in 1991 to 51 percent in 1997.[11]

Whereas the rate of participation in non-employer-sponsored training has fallen, the time commitment made by individuals who do choose to invest in their own human capital

[8] Includes all adults in Canada, with the exception of full-time students aged 17 to 24 who did not receive some form of employer support for their education.

[9] AETS and IALS measurements of training participation differ, reflecting the different reference period, population coverage, and collection methodologies of the two surveys.

[10] Based on data provided by Statistics Canada.

[11] Employer plus non-employer-sponsored proportions will add to more than 100 due to a number of learners who engage in both employer and non-employer-sponsored training.

development has risen substantially. At 278 hours, the average duration of non-employer-sponsored training is almost 2.5 times greater than for learning sponsored by the employer.

In the face of ongoing technological change and public discussion of the need to adapt skills to meet the challenges of a knowledge economy, the decline in overall participation in formal adult learning and the small increase in employer-supported participation may appear paradoxical. However, a number of factors may have contributed to these results, such as shifts in the composition of employment (towards self-employment), an increased reliance on informal methods of skills development, and what appears to be increasingly prevalent personal barriers to individual participation. The most recent AETS, for example, suggests that an increasing proportion of adults may be facing systemic and situational barriers to learning participation. Reported barriers such as lack of time off work for training, financial constraints, and inconvenient course times and/or locations may have contributed to the decline in the rate of participation in non-employer-sponsored education and training.

Consistent with international norms, Canadian employers tend to provide a higher level of training to younger workers, to workers with a university degree, to full-time workers, and to professional and managerial employees. There are no apparent gender biases, although women are about 60 percent more likely than men to participate in learning activities not supported by the employer. Larger firms and public sector employers tend to provide more training to their workers, whereas the self-employed tend to be under-represented among training participants. Not surprisingly, there are large industry-related differences in training participation – ranging from a low of 11 percent in agriculture (explained in part by the high level of self-employment in that industry) to a high of 43 percent in utilities.

To the extent to which systematic international comparisons can be drawn, Canada's record of adult skills development is about average, in relation both to the level of individual participation in skills development and to the distribution of training participation among population sub-groups. During the 1990's there seems to have been a marginal decline in the rate of overall adult learning participation, although employer-support for formal learning has increased. The average number of training hours per participant has risen sharply, with the greatest increases among learners sponsoring their own skill development.

Appendix B

Major Canadian Surveys of Adult Education and Training

B.1 The Adult Education and Training Survey

The Adult Education and Training Survey (AETS) is the primary vehicle for capturing and measuring individual participation in adult learning in Canada. The AETS has been conducted seven times since 1985. Each time, it has been conducted in the month of January and has collected information on adult participation in formal education and training over the previous 12 months. The AETS covers all forms of organized learning activities – programs and courses, job-related and personal interest, full-time and part-time, employer-sponsored and non-employer-sponsored. The survey covers training in all locations including university and college, private and commercial institutions, on-site at the workplace and over the Internet. In addition to details regarding who participates in adult learning and where, the AETS examines such issues as situational and institutional barriers to participation, subject matter of courses taken and respondent perceptions regarding the usefulness of those courses at work. The AETS is conducted by Statistics Canada as a supplement to the Labour Force Survey. All adults aged 17 to 65 are surveyed and responses are non-proxy. Respondents numbered approximately 43,000 individuals for the 1998 survey.

B.2 The Workplace and Employee Survey

The Workplace and Employer Survey (WES) is a matched employer-employee survey, exploring the links between events occurring in establishments and the outcomes for workers. Statistics Canada conducted a pilot of the survey in 1995. The production version went to the field in 1999. The WES covers about 25,000 employees and 6,300 firm locations. Both the employee and the employer questionnaires include questions on training.

B.3 International Adult Literacy Survey

The International Adult Literacy Survey (IALS) is an OECD survey, initially conducted in 1994. Seven countries, including Canada, participated in the original survey, and five more have been added since. The IALS is primarily a literacy survey but does include some comparative data on

formal adult education and training. In Canada, the main IALS sample included about 6,500 individuals, selected from Statistics Canada's Labour Force Survey.

B.4 The Workplace Training Survey

The Workplace Training Survey was conducted by EKOS Research Associates Inc. in 1995, for the Canadian Policy Research Networks (CPRN). About 2500 establishments of various sizes in all regions and industries in Canada were surveyed by telephone. This was followed by a more detailed questionnaire mailed to about one-third of these establishments. Additionally, the CPRN/EKOS database incorporates employee-employer case studies for 18 diverse establishments and longitudinal data for over 1000 establishments that had been part of a 1993 EKOS training survey.

B.5 New Approaches to Lifelong Learning Survey

A random telephone survey of 1500 adults across Canada was conducted by the Ontario Institute for Studies in Education at the University of Toronto and the National Research Network on New Approaches to Lifelong Learning (NALL) in 1998. This was the first survey dedicated exclusively to informal training in Canada. In this survey, the definition of informal training includes activities as diverse as learning computer skills related to employment, communication skills learned through volunteer work, and health-related knowledge acquired to satisfy an individual's general interest.

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